DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
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FORT MONROE, VIRGINIA 23651-5000

REPLY TO
ATTENTION OF:

ATIC-ATMR-CA (70-1i)

25 JUL 2001

MEMORANDUM FOR Commander, U.S. Army Space and Missile Command, Force Development and Integration Center (SMDC-IC-N/Michael R. Lloyd, PHR), Arlington, VA 22215-0280

SUBJECT: System Training Plan (STRAP) for the National Missile Defense (NMD) System

1. Reference memorandum, SMDC-IC-N, 25 Jun 01, SAB.

2. The NMD STRAP is approved. Please distribute IAW TRADOC Reg 350-70.

2. POC for this action is Mr. Richard M. Potter, DSN 927-4682, potterr@atsc.army.mil.

for Robert T. Reddy, Col
ROBERT E. SEGER
Senior Executive Service
Assistant Deputy Chief of Staff
for Training

SYSTEM TRAINING PLAN
(STRAP)

FOR THE

NATIONAL MISSILE DEFENSE (NMD)
SYSTEM

Approved 25 July 2001
Date: 31 August 2000
United States Army
Space and Missile Defense Command
Force Development & Integration Center

PREFACE

Contained within this text is the system training plan (STRAP) for the land-based (Army) portion of the NMD system. This plan will be used to govern the conduct of all Army training activities associated with the deployment/employment of a Capability 1 (C-1)/Threshold architecture. It is anticipated that the training strategy presented herein will also have application (in the future) to the Interim (C-2) and Objective (C-3) architectures. Although the NMD Program is joint in nature, the scope of this document is limited to Army training. As a result, the concepts and principles it contains are based on the requirements mandated by the Department of the Army (DA), the United States Army Training and Doctrine Command (TRADOC), and the United States Army Space and Missile Defense Command (SMDC). Those joint/Service requirements that have application to Army personnel are identified and acknowledged. It is recognized that many aspects of the NMD Program are still evolving. Consequently, changes will be made to this text as the system matures. It should be noted that the content of this and other Service System Training Plans (STPs) will ultimately be fused, de-conflicted, and incorporated into a Joint STP by the PRIME.

The Army's peacetime mission is to prepare the Total Army (Active and Reserve) to fight and win in war. The major concern of all commanders is to ensure their soldiers and units are trained to accomplish their mission and survive. To ensure mission-focused training, the Training and Doctrine Command (TRADOC) must train soldiers, staffs, and units to perform under realistic and stressful conditions.

SYSTEM TRAINING PLAN (STRAP)
FOR THE
NATIONAL MISSILE DEFENSE SYSTEM

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Reader's Guide

NMD is a unique system. It is being acquired using a unique system acquisition model. Its training concept is, likewise, unique. Non-standard terminology is used in order to precisely articulate the NMD system concept, acquisition model, and training concept, as well as to prevent confusion with more traditional approaches. To help the reader easily understand this document, its conceptual underpinnings, and the unique terminology of NMD, this comparison of terms is provided, along with a summary of the conceptual basis of NMD system acquisition, mission, manning, operations, and training.

1. NMD Concept/Acquisition Summary: A single system, with a limited quantity of interceptors, will be acquired for NMD C1. The system will be located at a single site, with some system elements (for example, the GBR) geographically displaced from the main NMD site. Some NMD elements will be in remote isolated locations. Those remote locations will be manned by few crewmembers.

With a system density of one and fixed element locations, there is no rotational basis for Active Component service members. It is cost prohibitive and operationally ineffective to rotate NMD crewmembers to other Air Defense systems. An NMD crewmember, therefore, will likely serve his/her entire military career on the NMD system, and possibly at a single location. Consequently, manning for the NMD system will come primarily from the Reserve Component (RC).

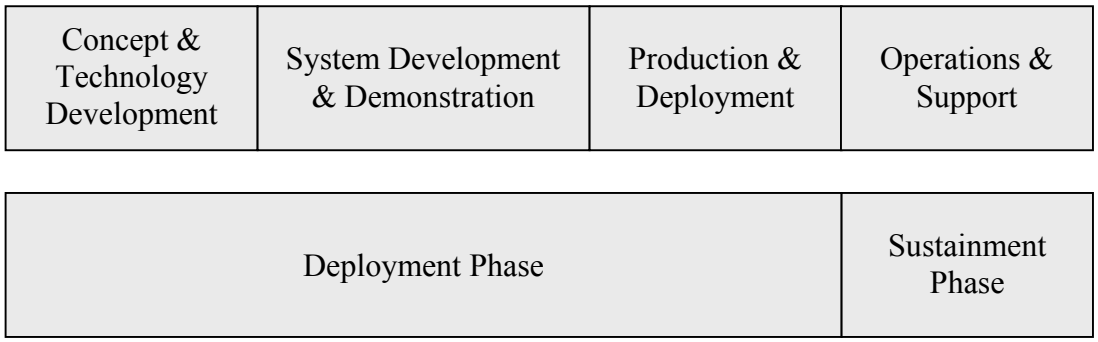
The mission of NMD, to defend all 50 states of the United States, is of supreme importance. Training and operational proficiency of all crewmembers is, therefore, equally critical. The system will be in a constant state of operational readiness, performing surveillance and C3 functions, yet interceptors will be launched only in case of a ballistic missile attack against the US. The attacking missiles will most probably deploy reentry vehicles containing weapons of mass destruction.

NMD is being designed, developed, and tested by a contractor team referred to as thePrime Contractor. If a decision is made to field the system, the Prime will produce the system, install and integrate system elements, and train the initial cadre for system evaluation, command, operation, and maintenance oversight. This is referred to as the Deployment Phase. Current planning is for the system to be contractor maintained throughout it operational life cycle, with RC service members overseeing contractor maintenance activities.

The next key milestone for NMD is named Deployment Readiness Review (DRR). DRR was scheduled for summer 2000, but was slipped by the present administration until after the 2000 presidential election and the next president takes offices. DRR is assumed, therefore, to occur spring/summer 2001. An affirmative DRR decision permits commencement of system production and fielding as part of the Deployment Phase. Deployment Phase will culminate in NMD Initial Operational Capability (IOC).

Attainment of IOC begins the Sustainment Phase. At IOC the Services accept ownership of the system and assume responsibility for command, operation, maintenance oversight, and training. The Sustainment Phase continues for the life cycle of the NMD system.

The 5000 Model



The NMD Model

2. Terminology Comparison: The following paragraphs compare the terminology used for NMD, and contained in the STRAP, to the standard terminology used by TRADOC, its centers and schools, for system acquisition and training.

Deployment Phase – From the aspect of system acquisition, the NMD Deployment Phase corresponds to the Concept and Technology Development, System Development and Demonstration, and Production and Deployment phases of the system acquisition model in the DOD 5000 series. The training that will occur during Deployment Phase corresponds to New Equipment Training (NET) as described in TRADOC Reg 350-70. All training development and course presentations during Deployment Phase are the responsibility of the Prime with the exception of Patriot MOS training and NMD Doctrine and Tactics Training (DTT). Patriot MOS training and NMD DTT are the responsibility of the Army.

Sustainment Phase – From the aspect of system acquisition, the NMD Sustainment Phase corresponds to the Operations and Support phase of the system acquisition model in the DOD 5000 series. Individual training of replacement NMD personnel, as well as collective and sustainment training will occur during the Sustainment Phase. All Sustainment Phase training is the responsibility of the Services. The USARSPACE will be responsible for training on Army NMD elements.

NMD Element – An NMD element is a major component of the NMD system as described in paragraph 1 of the STRAP.

Continuing Training – As used in the NMD training concept, continuing training corresponds to sustainment training as described in TRADOC Reg 350-70.

Instructor and Key Personnel and New Equipment Training – I&KP and NET as described in the NMD training concept collectively correspond to NET as described in TRADOC Reg 350-70.

Individual Qualification Training – IQT as described in the NMD training concept corresponds to Individual (Warrior) training as described in TRADOC Reg 350-70. All NMD specific individual training, including DTT, will occur at the NMD site; therefore, there is no NMD institutional training at a TRADOC school. Patriot MOS training, a prerequisite for NMD specific training, will occur at Ft. Bliss.

Unit Qualification Training – UQT as described in the NMD training concept corresponds to Unit (Warfighter) training as described in TRADOC Reg 350-70.

Training Aids, Devices, Simulators, and Simulations – TADSS as used in the NMD STRAP represents the full array of training aids, devices, simulators, and simulations located at the NMD site for individual, collective, and sustainment training. It is inclusive of embedded training capabilities. NMD TADSS will be operated and maintained by USARSPACE and/or the NMD Brigade. TADSS are not required for any TRADOC school.

SYSTEM TRAINING PLAN (STRAP)
FOR THE
NATIONAL MISSILE DEFENSE SYSTEM

1. System Description

a. National Missile Defense System: The National Missile Defense (NMD) Capability 1 (C1) System is comprised of the NMD operational system and the Test, Training and Exercise Capability (TTEC). The NMD mission is to provide protection against limited missile attacks targeted against all 50 states of the United States of America. The NMD Operational System is defined by those elements that are required to perform the NMD mission. These elements are Battle Management, Command, Control, and Communication (BMC3); X-Band Radar (XBR); Weapon System (WS); and the Upgraded Early Warning Radar (UEWR). Of these, the BMC3, XBR, and WS are Army elements. The Air Force is responsible for the UEWR.

(1) Battle Management, Command, Control, and Communication: BMC3 is the integrating element of the NMD system and the interface to the NMD System for the User. The BMC3 performs mission and engagement planning and situation assessment, directs and monitors system responses, and provides the functional and operational command and control system for the processing and display of information to support the necessary Human-in-Control (HIC) decisions. The BMC3 performs the generation of directives to implement a successful defense of the US against ballistic missiles. Interfaces are simplified by having each weapon and sensor element interface only with BMC3. The BMC3 will provide external interfaces to Integrated Tactical Warning/ Attack Assessment (ITW/AA) through Cheyenne Mountain Operations Center (CMOC). BMC3 provides centralized control, including HIC, and decentralized execution. The BMC3 element consists of the BMC2, the inter- and intra-site communications, and the In-flight Interceptor Communications System (IFICS) used to communicate with the interceptors while they are in flight

(2) X-Band Radar: The XBR will be an X-Band, ground-based radar system that will generate and provide re-entry vehicle (RV) tracking in response to sensor tasks from a BMC3 Element. The XBR is a taskable, X-band, phased array radar that performs surveillance, acquisition, and tracking. XBR information is used by BMC3 for

engagement planning, discrimination, interceptor commit, in-flight target updates (IFTUs), and target object maps (TOMs). The XBR will search for threat objects, either autonomously or in response to cueing information from other sensors (such as UEWR and/or Defense Satellite Program (DSP)). After acquiring threat objects, the radar tracks them, estimates their trajectory parameters, and based on threat object signatures, attempts to classify the objects into categories such as "warheads" or "decoys." This data is routed to BMC3, which provides Weapon Task Plans (WTP) to support launching interceptors when sufficient information becomes available. During interceptor flight, the radar tracks the target in order to obtain improved target trajectory and signature data. This data will be used by BMC3 to generate IFTUs and TOMs to the interceptor via the IFICS prior to its intercept attempt. Following the engagement, the XBR continues to collect data for assessing the intercept and the destruction of the target as part of the kill assessment function. A prototype XBR, the Ground-based Radar-Prototype (GBR-P), is in operation at the NMD system test range at Kwajalein Missile Range (KMR) for use in radar tests and was integrated into system tests in 1999.

(3) Weapon System: The WS is a ground-based, multi-stage interceptor that uses a Kinetic-kill concept to destroy RVs. The WS will consist of an Exoatmospheric Kill Vehicle (EKV) mounted on a high performance off-the-shelf (OTS) booster (launch vehicle) as well as command and launch equipment (CLE), peculiar support equipment (PSE), and system common equipment. The WS booster consists of 3 stages. The first stage is powered by a GEM-40VN solid propellant motor and the second and third stages are powered by ORBUS 1A motors. At the top of the booster is a KV. The Weapon's function is to engage ballistic missile warheads in the midcourse phase of their trajectories (i.e., when they are ballistic and while they are outside the atmosphere) and destroy them by force of impact. The Weapon receives and executes WTPs provided by BMC3. An on-board, multiple-waveband optical seeker is used for both target selection (discrimination) and homing during the interceptor endgame phase.

While on the ground, the interceptor will be encased in a canister with its associated built-in test equipment and environmental support equipment. In order to increase reliability and reduce life cycle costs, the WS remains in the dormant state until transitioned to a ready (alert) state.

(4) Upgraded Early Warning Radar: The UEWR is a surveillance and track sensor for the C1 architecture. Selected existing Early Warning Radars (EWR) from the PAVE PAWS and BMEWS radars will be upgraded to provide enhanced surveillance, tracking, and discrimination.

The UEWR scans the horizon at all times searching for ballistic missiles. Upon receipt of a cued search message from the BMC3, resulting from space-based sensor data, the UEWR erects a supplemental fence to detect the inbound threat. Upgrades via system software and large-scale changes in the hardware are needed to allow the current EWRs to generate sufficiently accurate target trajectory data to support intercepts and to make the data available to the NMD BMC3. These UEWRs will detect and track the individual objects in a ballistic missile attack in its midcourse trajectory. BMC3 will use their data to support situation assessment, engagement planning, interceptor commit, IFTUs, and update of threat information, which it relays to the interceptor.

(5) Organization: Force Design Update (FDU) 00-1 indicates an Air Defense Artillery Brigade for the NMD system. The brigade headquarters will be at Colorado Springs, with remote sites for NMD elements. The brigade will have a total of 308 military positions: 295 Army National Guard (Reserve Component) and 13 Active Component in the first "block". Subsequent Brigade personnel authorizations depend on program maturation and political decisions. The NMD brigade is a subordinate command of Army Space (ARSPACE), a component command of US Space Command (USSPACECOM).

b. First Unit Equipped Date (FUED): An FUED has not yet been published. Instead, Initial Operational Capability (IOC) is used for milestone planning. The current planned IOC is FY07.

2. Target Audience

Training will be required for all personnel who will command, support, operate, and oversee maintenance of NMD system elements. No comparable training courses exist today. There will be no NMD specific institutional training at TRADOC schools. NMD specific new equipment, Deployment Phase, and Sustainment Phase training will occur at the NMD site. All Air Defense Artillery (ADA) personnel or approved primary MOSs

selected for NMD command, operations, and maintenance oversight positions will complete Patriot training at Ft. Bliss prior to entering NMD specific courses. Army National Guard personnel will fill most positions, with a few active duty personnel in key command and staff positions in the brigade headquarters. Non-ADA personnel will be trained at the appropriate Military Occupational Specialty (MOS) producing school.

3. Assumptions

a. A single NMD system will be procured for C1.

b. Concepts and plans for NMD will continue to evolve. Changes to concepts and plans may require significant modification of this document.

c. The NMD Lead System Integrator contractor will develop NMD training material and provide training prior to IOC.

d. The NMD system will be designed with an embedded training subsystem that will support all levels of training.

e. USARSPACE will be responsible for post-IOC Continuing training.

f. ADA personnel or approved primary MOSs attending NMD specific training will be Patriot qualified through existing courses at Ft. Bliss. Non-ADA personnel will be trained at the appropriate MOS producing school.

g. The Army elements of the NMD system will be operated and commanded by a mixture of Active Component (AC) and Reserve Component (RC) personnel. Most of the personnel will be RC. Contractor personnel, with Army personnel providing maintenance oversight, will likely maintain the system.

h. NMD force structure will not increase nor impact total Army force structure.

i. NMD RC personnel attrition rate is expected to be low; therefore, training of single replacement individuals may be required.

4. Training Constraints

a. A system density of one, single operational site, and low quantity of personnel to be trained, during both deployment and sustainment phases, requires novel training concepts and strategies to attain/maintain operational readiness at affordable costs.

b. There is no institutional training base to support NMD training, nor is it cost effective to establish one; therefore, all NMD training will occur at the NMD site.
c. Due to the unique nature of the NMD mission, most engagement training must be simulation based.
d. The criticality of the NMD mission mandates all personnel be qualified in their position specific skills at all times.

5. Training Concept (AC/RC)

Training for the NMD C1 System will occur in two phases: Deployment Phase and Sustainment Phase. Army personnel, whether AC or RC, will be qualified in their respective MOSs prior to entering NMD training. Patriot qualification will provide the fundamental skills in symbology, doctrine, tactics, and operations upon which NMD skills can be built. The prerequisite Patriot training will occur at Ft. Bliss for both Deployment and Sustainment Phases. AC and RC training will be identical. Non-NMD specific training (administrative and security personnel) will be the responsibility of ARSPACE.

a. Deployment Phase – The goal during Deployment Phase is to produce an initial certified cadre capable of accepting the system at contractor turnover, and establishing a functional training capability that will migrate to the Services during Sustainment Phase. Deployment Phase training is divided into three segments: MOS qualification, new equipment training, and unit certification. The Army is responsible for MOS qualification training, including NMD doctrine and tactics training (DTT), and unit certification. Ft. Bliss will conduct Patriot qualification training. ARSPACE will conduct DTT and unit certification.

NMD new equipment training will be planned, developed, and executed by the Prime. Contractor identified assets and instructional equipment will be used as well as training sites determined by the contractor in order to maximize use of available resources. Courses developed and presented by the Prime will include, but may not be limited to operations, maintenance oversight, and command/support. The Prime will develop and deliver an exportable training package for use by ARSPACE for post-IOC NMD system specific training.

b. Sustainment Phase – The goal during Sustainment Phase is to provide replacement personnel individual, crew training and Continuing Training. Once IOC is achieved, responsibility for and conduct of NMD equipment training migrates from the Prime contractor to the Services; therefore, ARSPACE will be responsible for BMC3, XBR, and WS training.

Sustainment Phase training will occur in four segments: MOS qualification, initial qualification training (IQT), unit qualification training (UQT), and continuing training. Patriot MOS qualification will occur at Ft. Bliss. USARSPACE G3 will be responsible for IQT. The unit commander is responsible for continuing training. IQT, including DTT, will take place in Colorado Springs. UQT and continuing training will be at the site of the operational hardware. Prime developed training material will be utilized as the foundation for development of Sustainment Phase training material. As with Deployment Phase Training, Sustainment Phase training affects three different training audiences: operations, maintenance oversight, and command/support personnel.

6. Training Strategy

a. Instructor and Key Personnel (I&KP) - Command, staff, instructor, and test personnel will receive individual training on skills and knowledge required for their respective positions during the Deployment Phase. Due to differences in position duties and responsibilities, it is unlikely that they will be trained on all NMD elements. They will be trained only on the specific element(s) to which they will be assigned or for the specific function they will perform (i.e., operational test and evaluation, instruction, maintenance oversight).

b. New Equipment Training (NET) - NET will be conducted as part of Deployment Phase training. NET will serve to train the initial cadre for commanding, operating, and overseeing maintenance of the system. Each individual, after completing Patriot MOS qualification training and DTT, will complete new equipment training on the element to which they will be assigned. Separate tracks will exist for the three Army elements (BM/C3, XBR, and WS). With the exception of BMC3 operators, individuals completing element training will move on to NMD hardware. BMC3 operators next conduct training using the TTEC Stand-alone NMD Training System (SNTS). There

they will develop mastery of their individual skills and train to function as a crewmember.

c. Individual Qualification Training (Warrior) – IQT will occur during both Deployment and Sustainment Phases. Deployment Phase training is a shared responsibility between the Primeand the Army. Sustainment Phase training is the responsibility of the Army for the BMC3, XBR, and WS. The current concept is for NMD training during both phases to be essentially identical; the main difference being the option of Army versus contractor instructor/instructional resources. USARSPACE G3 will assume training and certification responsibilities for all Army NMD personnel in the Sustainment Phase. The following paragraphs provide a brief strategy for training individuals by type of position/responsibility.

(1) Operations Personnel – Subsequent to MOS qualification training and DTT, operators enter IQT where they are trained on the element to which they will be assigned. Separate tracks will exist for the three Army hardware elements (BM/C3, XBR, and WS). Individuals will be trained to mastery of the skills and knowledge required for specific positions, and team training, where applicable, to build the NMD combat crew into a cohesive, effective fighting team. SNTS will be used intensively to support IQT. During the Deployment Phase group instruction techniques will be used to train the crews assigned to operate the system. During the Sustainment Phase training of single individuals or small groups is anticipated due to the low turnover anticipated among RC personnel.

(2) Maintenance Oversight Personnel – Personnel overseeing contractor maintenance, like others, are trained only on the hardware for which they will be responsible. They receive individual training in their respective service and element training tracks and develop the skills and knowledge required for their specific assignments, whether they are overseeing the technical or support aspects of CLS maintenance. Unlike operators, maintenance oversight personnel may be trained on more than one element; therefore, they may attend more than one track.

(3) Command/Support Personnel - Command, staff, instructor, and personnel to support system testing are trained only on the element(s) to which they will be assigned. They receive individual training on skills and knowledge required for the

duties of their respective support positions and may also conduct training common to all positions.

(4) Individual Certification - An Individual Certification Process will include academic and performance evaluations. Academic evaluations are administered to assess general NMD knowledge and to assess performance of specific operator position functions and tasks required to successfully perform the mission. Performance evaluations will consist of a USARSPACE G3 certified evaluator observing the individual in a crew environment during exercise scenarios. Upon Individual Certification, the soldier is authorized to "pull status" as a regular crewmember.

(5) Individual Training Courses - Four types of courses may be used as part of the NMD System Training Program: Resident Courses, Distance Learning Courses, Field Courses, and on-the-job training (OJT) Courses.

Courses	
Type	**Description**
Resident	Resident Courses are the traditional or conventional type of course where the instructor and the learners regularly meet at a specific time and place (usually held at a centralized training center). The instructor comes prepared to provide instruction in an environment conducive for learning. Learners come prepared to learn by undertaking the instruction that leads to mastery.
Distance	Distance courses are guided self-study that the learner undertakes. Lesson materials, exercises, test, and feedback from an instructor are received via email or remote terminal. Time and place of study depends on the learner's specific circumstances. Courses conveyed via training manuals, video, and Computer Based Training (CBT) are excellent examples of Distance courses
Field	Field courses are essentially the same as resident courses, except they occur at a field site rather than at a centralized training facility. More specific training is likely to be undertaken in the field than at a training center, as the training relates to specific equipment or procedures.
OJT	OJT courses are a systematic application of the craftsman-apprentice principle. They are characterized by the learner being permitted to practice on the operating equipment under the supervision of a knowledgeable and skilled worker and or instructor.

d. Unit (Warfighter)

(1) Unit Qualification Training - UQT for NMD applies to the BMC3 operators, since the maintenance oversight and support personnel do not operate as part of a crew. At the conclusion of IQT, operations personnel report to the crew with which they will ultimately serve. Under the supervision of a certified crewmember, they train

using a structured program of instruction (POI) and apply those individual and crew skills that they learned in IQT, as part of an operational crew. The embedded training capabilities of the NMD hardware support UQT.

Crew proficiency is best achieved through deliberately pre-planned, rehearsed, and validated Crew Drills. Crew Drills consist of sequential responses to enemy actions that require minimal real-time directives from leadership. Crew proficiency is maintained by performing crew drills during scenario exercises, which supports the "train as you fight" concept. Upon completion of the crew-training program, the crew commander verifies that the new personnel are mission ready and arranges for crew certification by USARSPACE..

(2) Crew Certification - The Crew Certification Process also includes academic and performance evaluations. Academic evaluations are administered to assess general NMD knowledge and to assess performance of specific operator position functions and tasks required to successfully perform the duties. Performance evaluations will consist of evaluators observing and assessing the crew's performance while conducting exercise scenarios. Crews must be certified at least semi-annually. Certification is administered by USARSPACE G3 qualified Evaluators during Operational Readiness Evaluations (OREs).

(3) Operational Readiness Evaluations (ORE) - OREs are Commander USARSPACE's vehicle for assessing all Army NMD operators and crews in the performance of their duties and to ensure that NMD functions and tasks are standardized across all Army BMD operations/command centers. ORE teams are NMD qualified and USARSPACE G3 certified evaluators that are assigned to the USARSPACE G3. As a minimum, they will conduct unannounced evaluations of every crew at each of the Army BMD operations/command centers semi-annually. They may conduct announced evaluations as deemed necessary by Commander ARSPACE. Members of the ORE team are the same evaluators used in the Individual Certification Process. ORE results are indicative of Sustainment Training success.

(4) Scenario Exercises - Scenario exercises are the simulated "enemy actions" and NMD system capabilities for individual operator and crew training. Scenario exercises will provide a full array of threats and potential operational situations, as well

as multiple levels of difficulty. Scenario Exercises are conducted while utilizing NMD System stand-alone and embedded training capabilities.

(5) Continuing Training - Once soldiers and crews have trained to the USARSPACE G3 required standards and become certified they will maintain proficiency through Continuing Training. Continuing Training for Army NMD crewmembers will occur on-site. Proficiency can fluctuate naturally because of many factors, including training frequency, personnel turnover, hardware and software upgrades, and resource constraints. The primary focus of this training is on maintaining individual and crew proficiency. However, it may also be used for remedial training or for training on new procedures or hardware/software.

(6) Crisis Training - Crisis Training is training conducted in response to a crisis situation/operation. During crisis operations, defense options and associated execution plans suited to the crisis are reviewed, modified and approved utilizing the stand-alone training capability, as well as the development of new contingency execution plans based upon the real world operational situation; all with no interference to the operations/ command centers. Off duty crews at all operations/command centers are trained on all potential operational scenarios related to the crisis using the stand-alone training capability with no interference to the operations/command centers. On duty crews at all operations/command centers are trained on all potential operational scenarios related to the crisis with the embedded training capability.

(7) Situation Training - Situation Training occurs at the commander's discretion. It may be used to train an individual or crew who are not performing to standard. It may also be used when specific situations require crew training on modified Tactics, Technique, and Procedures (TTP), updates to crew drills, or by new situations such as: software upgrades, hardware upgrades, command directed procedural changes, new or altered execution plans, etc. Situation training will take place using the stand-alone training capability during the individual's or crew's off-shift.

7. Training Products

a. TADSS and Embedded Training - NMD requires both stand-alone training capabilities, which are representative of the actual operations/command center, and

embedded training capabilities, which are built-in into the mission equipment. Both capabilities are able to participate in local (non-integrated) and integrated scenario exercises. The following capabilities/devices comprise the NMD TTEC.

(1) Stand-alone Training Capability - The Stand-alone training capability is a separate training facility that is virtually identical to the operations/command center's mission equipment. It is ideally collocated with each Army operations/command center. Commander, ARSPACE envisions conducting continuous sustainment training via local exercises to sharpen individual operator skills and build crew cohesiveness. A dedicated stand-alone training capability will allow individual and collective training. It will also allow for continued defense option/execution plan development/refinement without interference to the adjacent operation/command center. Each standalone capability will have a USARSPACE G3 certified instructor assigned to operate the equipment. These operations are controlled through an additional control console.

(2) Integrated Stand-alone Training - The stand-alone training capabilities are capable of conducting Integrated Training. Integrated Training is defined as training conducted between two or more operations/command centers executing the same scenario exercise.

(3) Embedded Training Capability - The embedded training capability is built into the actual mission equipment. This capability allows "on duty" operators and crews to conduct sustainment training. Embedded capabilities must support locally defined training scenarios.

(4) Integrated Embedded Training Capability - Integrated training utilizing the embedded training capability allows all centers to participate in command directed end-to-end exercises under the control of the National Command Authority (NCA); Commander-in-Chief North American Defense (CINCNORAD); Commander ARSPACE; Commander Alaska NORAD Region (ANR); or the NMD Unit Commander. This capability allows the "train as you fight" concept to be conducted at its fullest potential, especially during Crisis Training.

b. Multimedia Products – During training material development, media evaluation and selection will be performed to determine the most effective, efficient and cost effective means of conveying lesson material. Multimedia products that will be

considered during the media selection process include, but are not limited to: Computer-Assisted Instruction (CAI); Computer-Based Training (CBT); and Web-Based Training (WBT). Training and reference material will likely be provided on Compact Disk-Read Only Memory (CD-ROM).

c. Manuals – Development, fielding, operation, and maintenance of the NMD system will require development of technical, reference, and training manuals. These manuals, developed during the Deployment Phase by the Prime, will be delivered to the Army for continued use during Sustainment Phase training and system operation. The manuals should be delivered in both hard copy and electronic media concurrent with equipment fielding.

d. System Hardware/Software and/or Components – NMD hardware, software, and components to support Warrior and Warfighter training will be developed by the Prime as an integral part of NMD material development. Training hardware and software will be analyzed and reviewed with the same discipline, and to the same extent, as will the operational system.

8. Training Support

a. Distance Learning Infrastructure - All operations, maintenance oversight, and command/support personnel will be assigned to the NMD C1 site or remote locations. Replacement personnel will be trained on an as-required basis. Therefore, no distance learning infrastructure outside of the NMD site is required.

b. Facilities - Existing training facilities at Ft. Bliss will be used for Patriot MOS qualification training. NET will be conducted at the NMD site or contractor facilities. IQT will be conducted primarily on the SNTS in Colorado Sprints, and UQT on NMD hardware located on site. Therefore, no facility requirements are anticipated other than those required for NMD sites.

c. Ammunition - Because of the unique mission of NMD and cost of interceptors, live ammunition will not be used specifically for training. Provisions may be made to allow BMC3 crews to train through participation in test launches of ground based interceptors from a launch location different from the operational site. Otherwise, all

engagement training, exercises, and evaluations will be performed using simulations; therefore, no ammunition is required for training.

d. Other Support Requirements - Other support requirements will likely develop during system development and Deployment Phase training; however, these unique support requirements cannot be articulated at this time.

e. Training Issues at Risk

(1) Funding has not been approved for some of the TADSS and embedded training requirements. The requirements are recognized and approved, funding is the only issue.

(2) The unique, critical mission of NMD makes training a continuing issue. All crewmembers and command staff must be capable of performing their position requirements at all times, with extremely short notice.

(3) The very low density of replacement personnel may result in the need for ARSPACE to train single service members. While training an individual is not cost effective, mission requirements mandate this technique.

9. Post Fielding Training Effectiveness Analysis (PFTEA)

A PFTEA will be conducted within eighteen to twenty-four months of the NMD system Initial Operational Capability to assess the effectiveness and efficiency of the total system training program, resources permitting.

ANNEX A

NMD SYSTEM TARGET AUDIENCE

Courses Affected by the National Missile Defense System		
Functional and Professional Courses	**USAADASCH**	**Sergeants Major Academy**
Officer Basic Course (14E Officer)	X	
Captain's Career Course (14A/14E Officer)	X	
Warrant Officer Advanced Course (140E Warrant Officer)	X	
14E (Patriot Fire Control Enhanced Operator/Maintainer)	X	
Basic Non-commissioned Officer Course (BNCOC)		X
Advanced Non-commissioned Officer Course (ANCOC)		X
Pre-Command Course (14A/14E Officer)	X	

ANNEX B

Combined Arms Training Strategy (CATS) Individual Training Strategies (Warrior)

Military Occupational Specialty (MOS)/Area of Concentration		
Training Strategy for 14E (NMD Crewmember)		
Location	14E Course	Ft. Bliss, TX
	NMD DTT	ARSPACE
	NMD Element Courses	Deployment Phase: Contractor selected site. Sustainment Phase: NMD Site.
Lesson Plans	TBD	
Course Start	TBD	
	Classes per Year	TBD
	Student Load per Fiscal Year	TBD
Training Strategy for 140E (NMD Warrant Officer)		
Location	Warrant Officer Advanced Course	Ft. Bliss, TX
	NMD DTT	ARSPACE
	NMD Element Courses	Deployment Phase: Contractor selected site. Sustainment Phase: NMD Site.
Lesson Plans	TBD	
Course Start	TBD	
	Classes per Year	TBD
	Student Load per Fiscal Year	TBD
Training Strategy for 14A/14E (NMD Officer)		
Location	Officer Basic Course	Ft. Bliss, TX
	Captain's Career Course	Ft. Bliss, TX
	Pre-Command Course	NMD Site
	NMD DTT	ARSPACE
	NMD Element Courses	Deployment Phase: Contractor selected site. Sustainment Phase: NMD Site.
Lesson Plans	TBD	
Course Start	TBD	
	Classes per Year	TBD
	Student Load per Fiscal Year	TBD

ANNEX C

CATS Short-range Unit Training Strategies (Warfighter)

UNIT/SUSTAINMENT TRAINING	REQUIREMENT CONTROL SYMBOL **TBD**
Requirements Determination and Acquisition Process LCM PHASE: Non-standard system acquisition process. Next milestone is Deployment Readiness Review.	SYSTEM: National Missile Defense System (NMD) Capability 1 (C1)

1. INDIVIDUAL TRAINING

a. Strategy: After completion of Patriot MOS qualification (14E, Warrant Officer Advanced Course, Officer Basic Course, or Captain's Career Course) individuals will attend individual qualification training on the NMD element(s) appropriate for their NMD crew position assignment. Individual training continues on the NMD hardware, TADSS, and embedded training capabilities of the system. Individual certification process will include academic and performance evaluations to assess general NMD knowledge, specific operator position functions, and tasks required to successfully perform position duties. Individual certifications will be evaluated by the USARSPACE G3.

b. Products required to sustain individual skills

PRODUCT	DATE REQUIRED	RESOURCE DOCUMENTS	RESPONSIBLE AGENCY	Notes
TBD	TBD	TBD	TBD	

2. COLLECTIVE TRAINING

a. Strategy: After certification of individuals, personnel participate in crew drills to develop proficiency in crewmember responsibilities. Training is performed on NMD system hardware, and through use of the considerable capabilities resident in the NMD TTEC. Collective training will be an on-going, daily activity. Collective training will include scenario exercises (simulated enemy actions); crew certification by the USARSPACE G3; OREs; crisis training (response to simulated crisis situation/operation); and situation training (training immediately prior to crew assuming their 5 days of "on rotation."

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UNIT/SUSTAINMENT TRAINING				
b. Products required to sustain individual skills				
PRODUCT	DATE REQUIRED	RESOURCE DOCUMENTS	RESPONSIBLE AGENCY	Notes
TBD	TBD	TBD	TBD	

3. UNIQUE REQUIREMENTS UNITS MUST BE APPRAISED OF TO PREPARE FOR SYSTEMS FIELDING AND EMPLOYMENT

TBD

COMMENTS:

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ANNEX D

Training Development Milestone Schedule

Individual Training Plan

Milestone	Date
1. Initial Individual Training Plan (ITP) submitted	TBD
2. Annotated task list submitted.	TBD
3. Course Administrative Data (CAD) submitted	TBD
4. Training Program Worksheet (TPW) submitted	TBD
5. ITP submitted	TBD
6. POI submitted	TBD
7. Digitized copy archived	TBD
8. Resident course start date	TBD

Army Correspondence Course Program

1. Requirement identified and submitted for approval	TBD
2. Requirement approved by HQ TRADOC	TBD
3. Development initiated	TBD
4. Advance breakdown sheet submitted	TBD
5. Digitized camera-ready copy (CRC) submitted	TBD
6. Subcourse material ready for replication/distribution	TBD

Field Manuals (FMs)

1. Requirements identified	TBD
2. Draft FM changes validated	TBD
3. FM outlines approved	TBD
4. FM coordinating draft completed	TBD
5. Print/digitization request initiated	TBD
6. Approved digitized CRC submitted	TBD
7. Replication/distribution completed	TBD

Army Training Literature

1. Analysis completed	TBD
2. Draft SM, ARTEP MTP, and TG	TBD
3. ATSC staffing	TBD
4. Digitized/CRC submitted	TBD
5. Replication/distribution completed	TBD

Interactive Multimedia Instruction (IMI)/Distance Learning

1. Requirements identified and submitted for approval	TBD
2. Requirements approved by ATSC and TRADOC	TBD
3. Resources identified	TBD
4. Courseware developed and validated	TBD

Milestone	Date
5. Master materials to ATSC for replication and distribution	TBD
6. Replication/distribution completed	TBD

Training Effectiveness Analysis (TEA)

1. Interim TEA developed	TBD
2. TEA updated for Milestone Decision Review I	TBD
3. TEA updated for Milestone Decision Review I	TBD
4. TEA updated for Milestone Decision Review III	TBD
5. Post-Fielding TEA (PFTEA) planned	TBD

Army Visual Information Production and Distribution Program (DAVIPDP)

1. High risk tasks and jobs identified	TBD
2. Storyboards validated	TBD
3. DAVIPDP requirements submitted to ATSC	TBD
4. Requirements approved by DA	TBD
5. Production initiated	TBD
6. Replication/distribution completed	TBD

Training Aids, Devices, Simulators, and Simulations (TADSS)

1. High risk, hard-to-train tasks identified	TBD
2. Need for TADSS identified	TBD
3. TADSS concept validated	TBD
4. TADSS incorporated into the STRAP (part of the CATS)	TBD
5. Analytical justification using the TEA provided	TBD
6. Training operational requirements document (ORD) developed	TBD
7. TADSS effectiveness validated	TBD
8. TADSS incorporated into the ORD	TBD
9. MOS-specific milestones/requirements for TADSS developed and incorporated in the integrated training strategy (ITS)	TBD

Facilities

1. Range and facility requirements identified	TBD
2. Identification of construction requirements completed	TBD
3. Construction requirements submitted to MACOM	TBD
4. Requirements validated and updated	TBD
5. Supporting requirements identified and availability coordinated	TBD
6. Installation and other construction requirements submitted to MACOM	TBD
7. Refined construction requirements and range criteria forwarded to MACOM	TBD
8. Construction initiated	

Training Ammunition

1. Ammunition identified	N/A

Milestone	Date
2. Initial ammunition requirements validated	N/A
3. Requirements included in the ORD	N/A
4. Ammunition item develop	N/A
5. Validation and test completed	N/A
6. Ammunition requirements identified in the ITP	N/A
7. Requirements provided to installation/MACOM manager	N/A
8. Requirements included in DA Pan 350-8	N/A
9. Production entered	N/A

ANNEX E

Resources

1. **Facilities Requirements**. (Military Construction Army (MCA) plus Operations and Maintenance, Army (OMA) and Other Procurement Army (OPA) tails). The purpose of OMA and OPA tails is to ensure critical support of MCA projects. They identify essential habitability items and operations equipment.

Description	Appn/Amount	FY Req'd	$ Source
TBD	TBD	TBD	TBD

2. **Additional Equipment Requirements. (OPA Funded)**

Equipment	BOIP Number	Number Required
TBD	TBD	TBD

3. **Additional OMA Funding Requirements**

Description	Appn/Amount	Freq	Req'd	$ Source
a. Training - TBD				
b. Training Support - TBD				
c. Base Operations (BASOPS) – TBD				

4. **Additional Manpower Requirements**.

Description	OFF	WO	ENL	CIV	TOTAL
a. Training - TBD					
b. Training Support - TBD					
c. Base Operations (BASOPS) - TBD					
d. Other - TBD					

ANNEX F

References

TITLE	DATE
Briefing to CG SMDC, "NMD System Training Plan"	Undated
National Missile Defense (NMD) Force Design Update (FDU) 97-1	14 Jul 00
National Missile Defense NMD System Training Plan Sustainment Phase Training Annex	27 Apr 00
System Training Plan (STP) for the National Missile Defense (NMD) Program	27 Apr 98/ 17 Apr 00
NMD Capability 1 (C1) System Requirement Document (SRD) (SECRET)	9 Apr 99
Operational Requirements Document (ORD) Revision	1 May 99
Operational Requirements Document (ORD) for National Missile Defense (NMD) (SECRET)	10 Mar 97

ANNEX G

Coordination

System: National Missile Defense			**Date:** 31 Aug 2000
	Comments		
Agency	**Submitted**	**Accepted**	**Rationale for non-accommodation**

ANNEX H

Acronyms

Acronym	Meaning
AC	Active Component
ADA	Air Defense Artillery
ANR	Alaska NORAD Region
ARSPACE	Army Space
BMC3	Battle Management, Command, Control, and Communications
C1	Capability 1
CAI	Computer Assisted Instruction
CBT	Computer-based Training
CD-ROM	Compact Disk – Read Only Memory
CINCNORAD	Command-in-Chief North American Defense
CLE	Command and Launch Equipment
CMOC	Cheyenne Mountain Operations Center
DSP	Defense Satellite Program
DTT	Doctrine and Tactics Training
EKV	Exoatmospheric Kill Vehicle
EWR	Early Warning Radar
FDU	Force Design Update
FUED	First Unit Equipped Date
GBR-P	Ground-based Radar-Prototype
HIC	Human-in-Control
I&KP	Instructor and Key Personnel
IFTU	In-flight Target Update
IOC	Initial Operational Capability
IQT	Individual Qualification Training
ITW/AA	Integrated Tactical Warning/Attack Assessment
KMR	Kwajalein Missile Range
PRIME	Lead System Integrator
MOS	Military Occupational Specialty
NET	New Equipment Training
NMD	National Missile Defense
NORAD	North American Defense
OJT	On-the-Job Training
ORE	Operational Readiness Evaluation
OTS	Off-the-Shelf
PFTEA	Post Fielding Training Effectiveness Analysis
PSE	Peculiar Support Equipment
RC	Reserve Component
RV	Re-entry Vehicle
SNTS	Stand-alone NMD Training System
STRAP	System Training Plan

Acronym	Meaning
TADSS	Training Aids, Devices, Simulators, and Simulations
TOM	Target Object Map
TTEC	Test, Training, and Exercise Capability
TTP	Tactics, Technique, and Procedures
UEWR	Upgraded Early Warning Radar
UQT	Unit Qualification Training
USARSPACE	United States Army Space
WBT	Web-Based Training
WS	Weapon System
WTP	Weapon Task Plan
XBR	X-Band Radar

ANNEX I

Training Aids, Devices, Simulators, and Simulations (TADSS) Requirements

1. ORD Requirements

a. High fidelity operator and maintainer training devices and documentation for both institutional training and unit sustainment training.

b. Stand-alone and integrated, embedded/embeddable test, training, and exercise capabilities that simulate system operations across the full range of credible operational scenarios.

c. Integrated system, operator, and crew training will simulate all operational functions and engagement parameters of the applicable systems.

2. TADSS Plan

Specifics for individual TADSS items continue to be developed and alternative techniques to satisfy ORD requirements analyzed. The following paragraphs amplify the ORD requirements and indicate the means by which the material developer intends to satisfy the requirements. Logistics Support Analysis data has not yet been developed; therefore, the tasks to be trained on each TADSS item is to be determined.

3. TADSS Overview

The following table shows which NMD TADSS capability supports NET, Individual, and/or Unit training.

Training Aids, Devices, Simulators, and Simulations (TADSS) Requirements for the National Missile Defense System			
Purpose	**NET**	**Individual**	**Unit**
Stand-alone Training Capability	X	X	
Integrated Stand-alone Training	X		X
Embedded Training Capability	X	X	
Integrated Embedded Training Capability	X		X

4. TADSS and Embedded Training - NMD requires both stand-alone training capabilities, which are representative of the actual operations/command center, and embedded training capabilities, which are built-in into the mission equipment. Both capabilities are able to participate in local (non-integrated) and integrated scenario exercises. The following capabilities/devices compromise the NMD TTEC.

a. Stand-alone Training Capability - The Stand-alone training capability is a separate training facility that is virtually identical to the operations/command center's mission equipment. It is ideally collocated with each Army operations/command center. Commander, ARSPACE envisions conducting continuous sustainment training via local exercises to sharpen individual operator skills and build crew cohesiveness. A dedicated stand-alone training capability will allow individual and collective training, and/or continued defense option/execution plan development/refinement without interference to the adjacent operation/command center. Each standalone capability will have a USARSPACE G3 certified instructor assigned to operate the capability. These operations are controlled through an additional control console.

b. Integrated Stand-alone Training - The Stand-alone training capabilities are capable of conducting Integrated Training. Integrated Training is defined as training conducted between two or more operations/command centers provided they are executing the same scenario exercise.

c. Embedded Training Capability - The embedded training capability is the training means built into the actual mission equipment. This capability allows "on duty" operators and crews to conduct sustainment training. Embedded capabilities must support locally defined training scenarios.

d. Integrated Embedded Training Capability - Integrated training utilizing the embedded training capability allows all centers to participate in command directed end-to-end exercises under the control of the National Command Authority (NCA); Commander-in-Chief North American Defense (CINCNORAD); Commander ARSPACE; Commander Alaska NORAD Region (ANR); or the NMD Unit Commander. This capability allows the "train as you fight" concept to be conducted at its fullest potential, especially during Crisis Training.